

C-A OPERATIONS PROCEDURES MANUAL

Text Pages 2 through 8

Hand Processed Changes

Approved: Signature on File _____
 Collider-Accelerator Department Chairman _____ Date _____

C-A-OPM 1.2 (Y)

1.2 C-A Documents

1. C-A Documents for Operations

- 1.1 The operating procedures and instructions for the RHIC, AGS, their injection systems, and experimental areas, are written in the following books and manuals as noted below.

2. C-A Operations Procedures Manual (OPM)

- 2.1 This manual contains the rules, limits, and operating procedures for the operation of the Relativistic Heavy Ion Collider (RHIC), Alternating Gradient Synchrotron (AGS), their injection systems (Linac, TVDG, Booster), and their experimental areas.
- 2.2 Control Copies - Two copies of the C-A OPM are maintained as control copies. Control copies are maintained up-to-date and used for daily operations. These copies shall be kept in binders with yellow covers and shall be labeled "Control Copy". One controlled copy is maintained on-line at <http://www.rhichome.bnl.gov/AGS/Accel/SND/OPM/> Distribution of Control Copies is as follows:

Copy No.	1	C-A Main Control Room, MCR Group Head
Copy No.	2	C-A Quality Assurance

- 2.3 The names of personnel currently holding these Control Copies are given in [C-A-OPM-ATT 1.2.a](#).

3. C-A Temporary Procedures Logbook (TPL)

- 3.1 The author of a new temporary procedure, or a new temporary change to a permanent procedure, must insert these documents into the Temporary Procedures Logbook, a logbook that the MCR Group Leader maintains in the MCR.

See C-A-OPM 1.4 for exact Procedure.

- 3.2 Canceled OPM or TPL Procedures are kept in a separate log that the MCR Group Leader maintains in the MCR.

See C-A-OPM 1.4 for exact Procedure.

4. Hand Processed Change Logbook

- 4.1 The author of a hand-processed change must insert the change into the Hand Processed Change Logbook, a logbook that the MCR Group Leader maintains in the MCR.

See C-A OPM 1.4 for exact Procedure.

5. Emergency Plans

5.1 BNL Emergency Response Plan

- 5.1.1 This plan sets forth the Laboratory's plans for response to all types of emergencies. It provides for effective planning of response to emergencies, establishes responsibilities of individuals and groups involved in or responding to emergencies, establishes lines of authority for direction and coordination of emergencies, and provides communications during the emergency. Through the implementation of this plan the Laboratory-wide emergency forces and off-site assistance are brought to the assistance of the Local Emergency Coordinator for effective implementation of the C-A Local Emergency Plan when needed. The C-A ESHQ Division Head is responsible for maintaining a copy of this plan.

5.2 C-A Local Emergency Plan

- 5.2.1 This plan establishes responsibilities and delegates authority at the local level during all types of emergencies. It provides for the evacuation of the C-A buildings, traffic control into and out of the buildings, and coordination of the emergency forces at the emergency site during implementation of the "C-A Emergency Procedures" and other emergency situations. The C-A Local Emergency Plan is included together with its implementing procedures in [C-A OPM 3.0](#).

6. Safety, Health, Pollution Prevention and Environmental Protection References

- 6.1 The BNL [Standards Based Management System](#) sets forth Laboratory policy on all forms of safety and contains the Laboratory's Environmental Safety and Health Standards for the areas of general safety, industrial hygiene, radiation safety, fire, and environmental protection. This document is on-line. A hard copy is not maintained.

7. **Operations Documents**

7.1 Operations Coordinator Log Book

7.1.1 Operating shift logbooks are maintained for the purpose of providing an accurate narrative of the operating history of the C-A. The operations coordinator on shift is responsible for maintaining this logbook. Guidelines for the maintenance of this logbook are given in Section 13 of this C-A-OPM.

7.1.2 In order to provide a record of dose rates at specific locations in the experimental areas, the computer generated log of Chipmunk interlocks for the previous shift, are also stored in this book. Operations logs are located in the MCR.

7.2 Standard Operating Record (STORE)

7.2.1 For each particle species delivered for the physics needs of the experimental users, the MCR Operators and Coordinators prepare a detailed record of the operating set points of devices, and relevant beam related physical parameters, of the accelerators and beam transport devices. The STORE is used as the reference document during AGS startup when the procedures of OPM Section 5 are implemented.

7.3 Restoration of HEP/HIP

7.3.1 Procedures that govern the restart of the AGS after a change in operating conditions, [C-A-OPM 6.1.9](#) require that a check-off list be filled out and signed by an operator and the Operations Coordinator before the physics program may resume. The completed check-off sheets are stored in the “Primary Beam Stops Restoration Check-Off Lists” binder.

7.4 Operations Journal

7.4.1 The Operations Journal is a binder used to store printouts from an interactive computer generated log that is filled out by the Operators during each shift. C-A performance and a record of accelerator downtime for each shift can be found in this binder.

7.5 Equipment Checklist

7.5.1 Operations Procedures Manual [Chapter 5](#) instructs the operators to verify from the C-A MCR, correct operation of C-A equipment. Each procedure has an associated checklist. The completed checklists are kept in the Set-up Checklists binder so that a number of tasks can be performed simultaneously.

7.6 LOTO Log Books

7.6.1 The AGS, Booster and RHIC LOTO Logs are bound journals used to record every Red Tag, Hold Tag, issued by the MCR, and installed on electrical breakers, or system enable keys. A log entry includes who installed the Hold Tag, where and when it was installed, and the serial number of the tag. The installer of the Red Tag fills out both the Tag and the Log Book.

7.7 Sweep Checklists and Gate Entry Logs

7.7.1 Sweep Checklists and Gate Entry Logs are kept for immediate reference to assure that all personnel have been accounted for and have left any primary area before beam is allowed into the area. These include:

- Sweep Checklists
- Gate Entry Logs
- Secondary Beam Sweep and Access Procedures

7.8 Radiation Safety Check-off List

7.8.1 Radiation safety check-off lists are generated by the Radiation Safety Committee to assure that appropriate configuration of primary and secondary beam areas have been realized to maintain personnel radiation safety at the C-A.

7.9 AGS Primary Beam Stops Check-off List

7.9.1 AGS Primary Beam Stops Check-off List are maintained to assure that AGS beam stops have been reviewed, to assure their proper operation before beam is introduced into any primary beam area.

7.10 C-A Emergency Response

7.10.1 The C-A Emergency Response binder contains a copy of the [C-A Local Emergency Plan](#) and Implementation Procedures, as well as Fire Code maps, for the Fire Protection System. Also included are duplications of the CAS system shutdown instructions found in the MCR General Guide.

7.11 Red Tag Log Book

7.11.1 The Red Tag Log is a bound journal used to record every Red Tag installed on electrical isolation devices or system enable keys. Red Tags found in this book are placed by MCR staff on equipment not found on formal LOTO checklists, which are located in C-A [OPM Chapter 2](#). Each log entry includes: who installed the Hold Tag, where and when it was installed, and the serial number of the tag. The installer of the Red Tag fills out both the

Tag and the Log Book. A Red Tag Log is maintained by each supervisor and used by his/her personnel.

7.12 Daily Orders and Long Term Orders

- 7.12.1 Operations orders are normally provided via the "Daily Orders" and "Long-Term Orders" pages on the [C-A Operations Web-site](#). These orders contain special operations requirements, administrative directions, special data collection requirements, trending requirements, and other short-term matters. Orders are to be clearly written, dated, and maintained by the MCR Group Leader. Orders are not to be used to change operating procedures.
- 7.12.2 Information intended to be permanent should be incorporated in permanent procedures. See C-A-[OPM 1.4.3](#), "Procedure for Implementing New, Revised, or Canceling Permanent Procedures".
- 7.12.3 Orders are to be issued by the MCR Group Leader to personnel. Long Term Orders are generally applicable for an 8 to 20 week period; that is, a typical running period. Daily orders are to be reviewed and deleted every 30 days, if appropriate, by the MCR Group Leader. Long Term Orders are to be removed when appropriate by the MCR Group Leader, or designee.
- 7.12.4 Daily and Long Term Orders shall be reviewed periodically. Review of Daily and Long Term Orders is to be documented by the Head of Operations in the Order Review Log on the [C-A Operations Web-site](#). The MCR Group Leader and the Head of Operations shall review Orders to ensure they are current.

8. **Operator Aids**

- 8.1 The MCR Group Leader approves of all operator aids. Aids are not used to alter procedures. Aids may be viewed via computer "windows" at each of the five control consoles in the MCR. They do not obscure any instruments or controls. Aids are protected and properly secured by the MCR Group Leader. Operator aids do not contain material that is procedural in nature. They contain maps, equipment lists, and non-emergency call-down lists, for example, see C-A [OPM 2.3](#), "Activities in Control Rooms."

9. **MCR Reference Material in the MCR**

9.1 Required Reading Binder

- 9.1.1 Memoranda issued during periods of the C-A operation, that have impact upon the C-A MCR Operations Group, are kept in the Required Reading

Binder. This information includes:

Changes in the process

Changes in equipment design

Information on industry and facility operating experiences

Information necessary to keep operations personnel informed of current facility activities

- 9.1.2 MCR Operators and Operations Coordinators are required to read, initial, and date any documents found therein. Information in the binder is screened by the Main Control Room Group Leader. The required reading binder is purged every fiscal year and material either discarded or filed as appropriate.

9.2 Set-Up Books

- 9.2.1 Set-Up Books are bound volumes used by Operators, Operations Coordinators, and other Systems Specialists, to document conditions observed during the setup of the accelerators and during normal operations.
- 9.2.2 Documented conditions may include unusual accelerator conditions that are within the C-A performance envelope, or measurements of parameters during normal operations. Set-Up Books exist for each Heavy Ion Run, Proton Run, and SEB run. Information is presented in chronological order.

10. **Radiation Protection and Access Control Documentation**

10.1 Access Control

- 10.1.2 The C-A Electrical Systems Design Room shall maintain the computer-generated drawing files for the Particle Accelerator Safety System (PASS) and the Access Control Security System. The accuracy of these drawings is the responsibility of the C-A Access Controls Group.

10.2 Fault Study Log Books

- 10.2.1 Fault study logbooks are maintained in the Main Control Room for the purpose of providing an archive of fault study measurements during the operating history of the C-A. The Chair of the C-A Radiation Safety Committee shall maintain these documents.

11. **C-A Quality Assurance Procedures**

- 11.1 OPM Chapter 13 contains the [Quality Assurance Procedures](#) that implements the various aspects of the Quality Assurance Program of the C-A.

12. Qualification Listing

- 12.1 Individual Training records are located in the [Brookhaven Training Management System](#)

13. Care and Keeping of Logs

- 13.1 Completed documents shall be maintained for the expected lifetime of the C-A complex. The Main Control Room Group Leaders is responsible for storing and retrieving completed documents identified herein.

14. References

- 14.1 [C-A-OPM 1.1, "Authorization".](#)
14.2 [C-A-OPM 1.4, "C-A Plans, Policies, and Operating Procedures".](#)
14.3 [C-A-OPM 2.7, "Logkeeping".](#)
14.4 [C-A-OPM 3.0, "Local Emergency Plan for the C-A Department".](#)
14.5 [C-A-OPM 6.1.9, "Requirements for Extracting Beams from the AGS".](#)
14.6 [BNL SBMS](#)
14.7 [C-A QA Manual](#)

15. Attachments

- 15.1 [C-A-OPM-ATT 1.2.a](#), "Personnel Holding Control Copies of C-A-OPMs".